Using High Rates of Foliar Urea to Replace Soil-Applied Fertilizer in Early Maturing Peaches

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Objectives

Determine the optimum timing and concentration of 1 or 2 foliar urea sprays in the fall on early season peach trees.
Study the effects of foliar urea sprays over several years on tree productivity, fruit quality and vegetative growth.
Study the distribution within the tree of N from foliar sprays using ^{15}N as a tracer.
Disseminate information to growers about foliar urea using newsletters, meetings, radio and popular journals.

Summary

This project investigated the ability of foliar N sprays to supply N to the tree and minimize nitrate leaching through the soil. Mature peach trees were sprayed with a 10%^{15}N urea solution. Leaves were collected as they fell and the trees were excavated so that ^{15}N contents and distribution could be determined. Peach leaves rapidly absorbed urea-N irrespective of timing of application, and much of it was translocated to perennial tree parts within 4-7 days after application. The experiments with foliar urea spray suggested there may be problems with reduced fruit size when foliar urea alone is used to fertilize peach tree. Comparing the results of treatment receiving 50 lbs. N to the soil in September and 50 lbs. N to the leaves in October showed that both the treatments had equal yields and fruit size. It also showed higher stored N levels in roots and shoots during the dormant season that contributed to strong fruit and shoot growth early in the season.
The results demonstrated that N from foliar applications of urea in early-to mid-October is effectively taken up and distributed throughout peach trees. Rates of 50 to100 lbs urea/100 gals water/acre supply sufficient N to substantially reduce soil-supplied N fertilizers, thus reducing excessive vegetative growth without impacting productivity. Associated studies have shown that urea can be mixed with zinc sulfate sprays applied at the same time of the year, and that urea enhances the uptake of zinc. Therefore, foliar urea is a tool that not only can help reduce nitrate pollution of groundwater, but can also assist a peach grower with other cultural practices.

Project Publications

Rosecrane, R.C., R.S. Johnson and S.A. Weinbaum 1998. The effect of timing of

post-harvest foliar urea sprays on nitrogen absorption and partitioning in peach and nectarine tress. Journal of Horticultural Science and Biotechnology 73:856-861
Rosecrane, R.C., R.S. Johnson and S.A. Weinbaum 1998. Foliar uptake of urea-N by nectarine leaves: a reassessment. HortScience 33:158.